What is claimed is:

1. An all optical chopping device for shaping and reshaping comprising:

   a threshold device having an input terminal for receiving an optical input signal and an output terminal for emitting an optical output signal in response to a part of said input signal having intensity above a threshold level of said chopping device,

   wherein said output signal is narrower than said input signal.

2. The device of claim 1 wherein said input terminal includes an optical amplifier.

3. The device of claim 1 wherein said threshold level is adjustable.

4. An all optical chopping device for shaping and reshaping comprising:

   i. a first splitting device having at least first second and third terminals; and

   ii. at least one nonlinear element,

   wherein said second and third terminals form an optical loop including said at least one nonlinear element displaced from the center of said optical loop, wherein said first splitting device arranged to receive an input signal from the first terminal for reflecting a first output signal into the first terminal, and wherein said first output signal is narrower than said input signal.

5. The device of claim 4 wherein said first splitting device further includes a forth terminal.

6. The device of claim 5 wherein said device arrange to produce a second output signal at said forth terminal.

7. The device of claim 5 wherein said second output signal is narrower than said input signal.

8. The device of claim 7 wherein said second output signal is produced by chopping selected from a group of chopping including head chopping, tail chopping, and head and tail chopping.
9. The device of claim 4 wherein the first terminal further includes a directing device for directing said first output signal into a second output.
10. The device of claim 9 wherein said first splitting device further includes a forth terminal, said first terminal further includes a second splitting device, at least one of said second output and said fourth terminal includes a first combining device for directing part of said input signal from said second splitting device via a first optical path into one of said second output and said forth terminal.
11. The device of claim 10 wherein said first optical path further includes an optical amplifier.
12. The device of claim 11 wherein said one of said first optical path and said first terminal includes an optical delay line.
13. The device of claim 9 wherein said directing device selected from a group of devices including circulators, couplers, and directional couplers.
14. The device of claim 4 wherein the first terminal further includes a third splitter and a second combining device, said third splitter and said second combining device connected via second and third optical paths, said one of said second and third optical paths includes an optical delay line and said one of said second and third optical paths includes an optical amplifier.

15. The device of claim 4 wherein said output signal is produced by chopping selected from a group of chopping including head chopping, tail chopping, and head and tail chopping.

16. The device of claim 4 wherein said at least one non linear element is a solid state amplifier.

17. The device of claim 4 wherein said at least one non linear element is an optical amplifier having controllable gain.

18. An all optical chopping device for shaping and reshaping comprising:

i. a first splitting device having at least first second and third terminals; and

ii. at least one nonlinear element,

wherein said second and third terminals form an optical loop including said at least one nonlinear element displaced from the center of said optical loop,

wherein said splitting device arranged to receive an input signal from the first terminal for splitting said input signal into optical components propagating clockwise and counterclockwise in said optical loop,

wherein said optical components partially overlap each other at said nonlinear element for producing a first output signal at the first terminal, and

wherein said first output signal is narrower than said input signal.

19. An all optical chopping device for shaping and reshaping comprising:

i. a first splitting device having at least first second and third terminals;

ii. at least one nonlinear element; and

iii. at least one attenuator,

wherein said second and third terminals form an optical loop including said at least one attenuator and said at least one nonlinear element displaced from the center of said optical loop,

wherein said first splitting device arranged to receive an input signal from the first terminal for reflecting a first output signal into the first terminal, and

wherein said first output signal is narrower than said input signal.

20. The device of claim 19 wherein said first splitting device further includes a forth terminal.

21. The device of claim 20 wherein said device arrange to produce a second output signal at said forth terminal.

22. The device of claim 20 wherein said second output signal is narrower than said input signal.

23. The device of claim 22 wherein said second output signal is produced by chopping selected from a group of chopping including head chopping, tail chopping, and head and tail chopping.

24. The device of claim 19 wherein the width of said first output signal is selectable.

25. The device of claim 24 wherein the width of said first output signal selected by selecting the gain and attenuation of said at least one attenuator and at least one non linear element.

26. The device of claim 19 wherein the first terminal further includes a directing device for directing said first output signal into a second output.

27. The device of claim 26 wherein said splitting device further includes a forth terminal, said first terminal includes a second splitting device, at least one of said

second output and said fourth terminal includes a first combining device for directing part of said input signal from said second splitter via a first optical path into one of said second output and said forth terminal.

28. The device of claim 27 wherein said first optical path includes an optical amplifier.

29. The device of claim 28 wherein said one of said first optical path and said first terminal includes an optical delay line.

30. The device of claim 26 wherein said directing device selected from a group of devices including circulators, couplers, and directional couplers.

31. The device of claim 19 wherein said output signal is produced by chopping selected from a group of chopping including head chopping, tail chopping, and head and tail chopping.

32. The device of claim 19 wherein said non linear element is a solid state amplifier.

33. The device of claim 19 wherein said at least one non linear element is an optical amplifier having controllable gain.

34. The device of claim 19 wherein said at least one attenuator is an optical amplifier having controllable loss.

35. The device of claim 19 wherein the width of said first output signal is selectable.

36. The device of claim 19 wherein the width of said first output signal selected by selecting the gain and attenuation of said at least one attenuator and at least one non linear element.

37. An all optical chopping device for shaping and reshaping comprising:

    i. a splitting device having at least first second and third terminals;

ii. at least one nonlinear element; and

iii. at least one attenuator,

wherein said second and third terminals form an optical loop including said at least one attenuator and said at least one nonlinear element displaced from the center of said optical loop,

wherein said splitting device arranged to receive an input signal from the first terminal for splitting said input signal into optical components propagating clockwise and counterclockwise in said optical loop,

wherein said optical components partially overlap each other at said nonlinear element for producing a first output signal at the first terminal, and

wherein said first output signal is narrower than said input signal.